

## Electronic Supporting Information

### Iron-Zinc Sulfide $\text{Fe}_2\text{Zn}_3\text{S}_5/\text{Fe}_{1-x}\text{S}@C$ Derived from Metal-organic Framework as a High Performance Anode Material for Lithium-Ion Battery

Jun-chao Zheng<sup>1</sup>, Ying-ying Yao<sup>1</sup>, Gao-qiang Mao<sup>1</sup>, He-zhang Chen<sup>1,2</sup>, Hui Li<sup>1</sup>, Liang Cao<sup>1</sup>, Xing Ou<sup>1</sup>, Wan-jing Yu<sup>1</sup>, Zhi-ying Ding<sup>3</sup>, Hui Tong<sup>1,\*</sup>

1. *School of Metallurgy and Environment, Central South University, Changsha, 410083, P.R. China*

2. *School of Chemistry and Chemical Engineering, Hunan University of Science and Technology, Xiangtan 411201, China*

3. *School of Chemistry and Chemical Engineering, Central South University, Changsha, 410083, P.R. China*

\*Correspondence: [huitong@csu.edu.cn](mailto:huitong@csu.edu.cn) (Hui Tong)

Table 1: carbon and sulfur analysis and ICP results

element	Content (wt%)
C	5.46
S	35.70
Fe	31.24
Zn	27.60

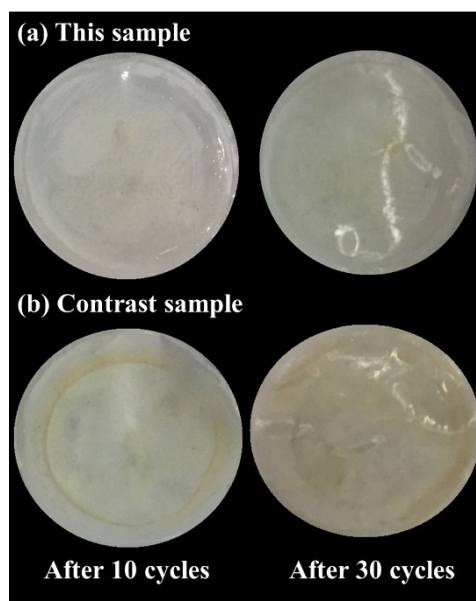


Figure S1 Separator's surface after different cycles, (a)  $\text{Fe}_2\text{Zn}_3\text{S}_5/\text{Fe}_{1-x}\text{S}@C$ , (b)

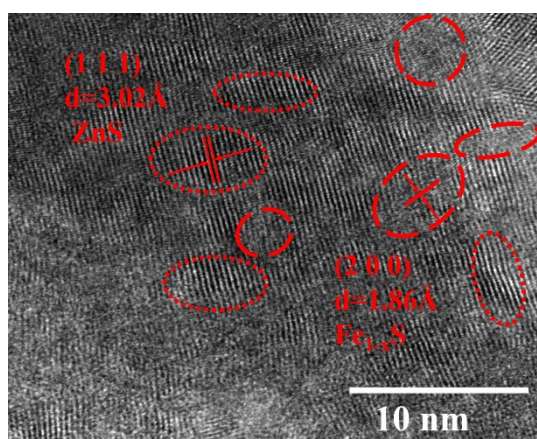
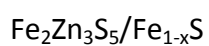
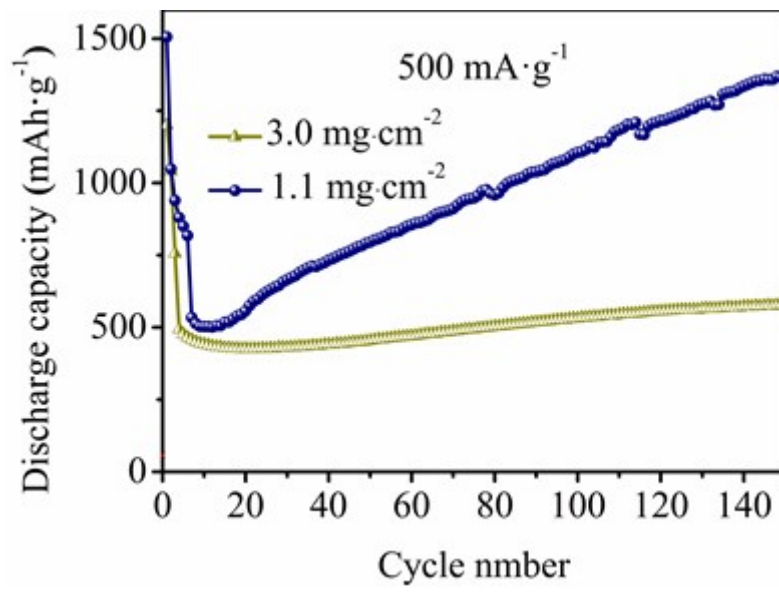


Figure S2 HRTEM images of  $\text{Fe}_2\text{Zn}_3\text{S}_5/\text{Fe}_{1-x}\text{S}@C$  composite charged to 3.0 V after

three cycles.



**Figure S3** Electrochemical performance with different mass.